



Figure 1: ISA2cd Nucleotide Sequence

caagatggat aacctccgtg	aatgcataaa ccgcaaaaaga agactacttg ccttaccaga	60
tgttcctgaa acttcggatg	cctttctaag tgatttgaga catctataca tgggtgttgc	120
tttctgtgat caacacaaaa	ccactggaga cgaatcaaga ttccaccaacc tggattact	180
tgacccaagat gaagcactag	gtgcccggaa agctttgaa gcacaaacatg gaataaaagg	240
aggttcttta ggagacgttc	ttgaccatga actgaaaaag gtcattgaat ttactttac	300
ttctggaagt ttgtatattg	ccgaacaaag aaaaagaaag actcaagcag actcaataat	360
tgtgtcggtt tcagaaggac	ttaacgactt cagcgtatca cacggagtgc tagacatggg	420
acttgtggaa acaggggtga	atgcagtaag agatttctgc acacaaaacg gaataccaat	480
gaagataaat cagtaggat	ccacgagaac accaacaccg atcagcacat gcacaaatctc	540
tgaacaata acacgacaga	taaacagtac aattactgaa aggaaaatgg aaacagtact	600
ggcagcaatc gcaattaaac	cagaactcaa actaactcg aaaggatgca gaccttgaa	660
agaactagaa gatgaaaata	ttctgtggat ggacctcaa ttctgtgaaa ttgatgaaag	720
ttttccttac agaggaggc	catacgggaa ctccctgcaa gaattgctgc ttacaaccaa	780
cgacgttagag accaacggga	aagacagaga agaagtagta aagaagatac tggataacaa	840
ggcgttccacc gttgaaagtg	gtgaatgcat aataacactt ccagacaaaaa tgacttgtt	900
cggagaacag gagaagaaga	gaccgcaac aatagacgaa gtgagaacccg caggagaaag	960
gtttgaacag agtgtaaac	cgaaaaccca aagatatgga aggttatcag acaaattggat	1020
ggagcttgaa aagtttatct	ttactgcaag caaaacagaa gtggatactt tcccttctgt	1080
agggaccgaa agacttgagt	cggttggagt gtgtgtcgg a ctttacaca gagcggccac	1140
aaccaggata attagaccta	tgattcaagg agggaaatgt tggggatgaa tggtaaaaac	1200
aaagtccaaa atggagaca	cgaggaagga aggataactgt cacgcaatca ttttcggaaa	1260
aggggaagat aaatcaggac	aaaacaagat gacaatgatg gggaaaacag tacattggca	1320
tctaagagta gttaagtcta	aaggagactg gatggcgaa caactctgtg caaacaaaag	1380
cagaatatgg gaacatgacc	ctgagcttagt aacagaagga gtgacgttc taatgacgccc	1440
tttttctcag aaaattgcca	ccatttagtag atggaggggca atgaggttag acagcatgtt	1500
tcatgtttct agtgcctggc	atcattcacc tgcgtgtgaa gctgcattgg caatgctgag	1560
aaagtttgat gagatagtac	atgccatcaa ccagaaaaga gattgggtg ttgtggggag	1620
tatggaggac atggtaagg	aagtggagga aataggggag cacttgcaga cggcatgtga	1680
tttttagagtt tacaacatgt	gcaaaacctt gattcagaaa attgcagtca gtacccaatg	1740
agtggttatt tacttgtaaa	tttgtgtgtt ttgcacata tttttttttt gacgcggccg	1800
cggtcgacgc ggccgcgaat t		1821

Figure 2: ISA2cd Amino Acid Sequence

1	11	21	31	41	51	
1 MDNLRECINR KRRLLALPDV PETSDAFLSD LRHLYMCVAF CDQHKTTGDE SRFTNLELLD						60
61 QDEALGAQRA FEAKHGIKGG SLGDVLDHEL KKVIEFTFTS GSLYIAEQRK RKTQADSIIV						120
121 CVSEGLNDFS VSHGVLDMGL VETGVNAVRD FCTQNGIPMK INQVGSTRTP TPISTCKISE						180
181 QITRQINSTI TERKMETVLA AIAIKPELKL TQKGCRPCKE LEDENJLWMD PQFCEIDESF						240
241 PYRGGPYGNF LQELLTTND VETNGKDREE VVKKILDNKA FTVESGECII TLPDKMTCFG						300
301 EQEKKRPATI DEVRTAGERF EQSVKPKTQR YGRLSDKWME LEKFIFTASK TEVDTFLSVG						360
361 TERLESVGVC VGALHRATTT RIIRPMIQGG KCWGMMFKTK SKMGDTRKEG YCHAIIFGKG						420
421 EDKSGQNKM T MMGKTVHWHL RVVKSKGDWM AQQLCANKSR IWEHDPELVT EGVTVLMT P						480
481 SQKIATISRW RAMRLDSMFH VSSAWHHSPA CEAASAMLRK FVEIVHAINQ KRDWGVVGSM						540
541 EDMVKEVEEI GEHLQTACDF RVYNMCKALI QKIAVSTQ						

Molecular weight: 65336.10

Theoretical pI: 6.94

Figure 3: ISA1mta Nucleotide Sequence

gcaaaagatyg	ctcaaattccc	aaaaataata	cagaaaacgt	ataagagatg	gccgataaaag	60
gtatgactta	ttctttgat	gtcagagaca	acaccttgg	tgtagaaga	tctaccgcta	120
ctaaaagtgg	cattaagatc	tcctacagag	aggatcgagg	aacatcactt	ctccaaaagg	180
cattcgcgg	gacagaagat	gaattctggg	tggagttaga	tcaagatgtc	tacgttgaca	240
aaaagattag	aaaatcccg	gaagaagaga	aatgaagga	catgagcaca	agagtgtctg	300
gagcagtgg	agcagcaatt	gaaagatcag	ttgaatttg	caatttctca	aaagaagcag	360
cagctaacat	tgaaatggct	ggttagatg	atgaagaagc	tggaggaagt	gtctggtag	420
acaacagaag	gaagaacaaa	ggggctcaa	acatggccta	aatctgtct	ctattcatag	480
ggatgggttt	tcctgctctc	actactttct	tcagtgcata	cctatcagaa	ggtgaaatga	540
gcatctggca	aaatggacaa	gcaatcatca	gaattctggc	actggcagat	gaagacggaa	600
agagacaaac	aagaacagga	ggacagaggg	tggacatggc	tgatgtacc	aagctgaacg	660
tagtcacggc	taacggggaa	gtcaagcaag	ttgaagtaaa	cttgaacgat	ctcaaaggcag	720
cattcaggca	gagtagacct	aaaagatcg	actacagaaa	aggccaagg	tccaaaggcta	780
cagaatcaag	catctccaa	caatgtatgg	cactgattat	gaaatctgt	ctgtcagcag	840
accaactttt	tgctccggg	gtgaagatg	tgaggacgaa	cggttcaat	gcgtcgata	900
caacactggc	agaaggggca	aacattccga	gcaagtacct	aagacacatg	aggaactgcg	960
gaggagtagc	tctggacctg	atgggaatg	agaggatcaa	aaactcacct	gaaggagcc	1020
agtcttaagat	ctttccatc	atccagaaga	aagtaagagg	aagatgtcgc	acagaggagc	1080
aacgcctcct	gactagcgc	ctgaaaatca	gchgacgtg	aaacaagttc	cagagaatca	1140
tggacactt	atgtacaa	ttccgtattt	accctccaa	aactacc	tgtttcattc	1200
cacctattt	cagtctcat	atgtacatcc	aagaaggcaa	ctctgtact	gcaatggatt	1260
tcatgaaaaaa	cggagaggac	gcctgcaaga	tctgcagaga	agccaaactg	aaagtgggg	1320
taaacagttac	gttcacaatg	tcagtagcta	gaacatgcgt	tgcagtgtca	atggttgca	1380
cagctttttt	ttctgcagat	atcatcgaga	atgcagtgc	tggttccgaa	agttacagat	1440
ccaacatcaa	ggctaaacaca	accaaaccaa	aaaaggactc	cacttacaca	attcaaggac	1500
ttagattgtc	taacgtgagg	tatgaagcaa	gacctgaaac	atcacaaagc	aacacagaca	1560
gaagttggca	agtgaacgtg	actgacagct	tcggaggact	tgctgttgc	aaccaagg	1620
caatttagaga	aatgtcttaga	gacggaaacat	cagagacaac	tagtgtgaac	gtcagagcccc	1680
tggtgaagag	aattctgaaa	tcagcttcag	agaggagtg	aagactgt	aagacattt	1740
tggtgggaga	acaagggaaa	tcagcttatt	ttatctctgg	tgtggact	ttctctattt	1800
actttgaagg	ggttagaggaa	gcggaaagga	taactgacat	gacac	tttgagttt	1860
acgaggacga	cgaggaagag	gaagacattt	acat	tttag	tgacaattat	1920
aattacccta	tatttttga	atataatg	aaactattt	gtgtt	aaagg	ttgtgggttt
gattattaaa	ttttaattga	aacggattt	acgatatt			1980
						2018

Figure 4: ISA1mta Amino Acid Sequence

1	11	21	31	41	51	
1						
1 MADKGMTYSF	DVRDNTLVVR	RSTATKSGIK	ISYREDRGTS	LLQKAFAGTE	DEFWVVELDQD	60
61 VYVDKKIRKF	LEEEKMKDMS	TRVSGAVAAA	IERSVEFDNF	SKEAAANIEM	AGVDDEEAGG	120
121 SGLVDNRRKN	KGVSNMAYNL	SLFIGMVFP	LTTFFSAILS	EGEMSIWQNG	QAIRILALA	180
181 DEDGKRQTRT	GGQRVDMADV	TKLNVVTANG	KVKQVEVNLN	DLKAAFRQSR	PKRSDYRKQ	240
241 GSKATESSIS	NQCMALIMKS	VLSADQLFAP	GVKMMRTNGF	NASYTTLAEG	ANIPSKYLRH	300
301 MRNCGGVALD	LMGMKRIKNS	PEGAKSKIFS	IIQKKVRGR	RTEEQRLLTS	ALKISDGENK	360
361 FQRIMDTLCT	SFLIDPPRTT	KCFIPPISSL	MMYIQEGLNSV	LAMDFMKNGE	DACKICREAK	420
421 LKVGVNSTFT	MSVARTCVAV	SMVATAFCSA	DIENAVPGS	ERYRSNIKAN	TTKPKKDSTY	480
481 TIQGLRLSNV	RYEARPETSQ	SNTDRSWQVN	VTDSFGGLAV	FNQGAIREML	GDTSETTSV	540
541 NVRALVKRIL	KSASERSARA	VKTFMVGEQG	KSAIVISGVG	LFSIDFEGVE	EAERITDMTP	600
601 EIEFDEDDEE	EEDIDI					

Molecular weight: 68050.47

Theoretical pI: 8.20

Figure 5: ISA3mx Nucleotide Sequence

atgtctggat ttaacctcg	ggtaatggtg ccggaaacaag gagaaaaagt ggtcttcagc	60
cttactgaaa cggggtcatg	tgtctcggt tacggagatg atgaaccagg tgaagggtcc	120
tgcgaacttg cctctgaaaa	catggatttt ccaagttgtc ctctggggaa tggagatgac	180
ttctgtctgt cgctggcgct	aagcacaatg agatggctg ggatgaccaa gagaaacaac	240
ttcatggaca gattcattgg	aagttttgtt cactgtacac cagtgtatgt ctggtcgtat	300
ggaaatttgtt ccaagaaaag	ccatcacaaa atgggttgcc acacttgcac agacgagttac	360
aagttcgttg acaaggacga	gatgcaggga tactatggg gatgtctaga ggcttctact	420
gacattttcc ttgtatgaaact	tgctactgtt gttacagggtg gttttttcc tgcggactc	480
aaaggttcct ggggaggatg	gtacctcaag tacgtcaggt atgctggacc tcttgcggga	540
tcaagtggat tcattgtcaa	tcaacgattc tacgacagag cccaaaacaa gactggatcc	600
agggttgtat ccatgggtga	aatggacgga gacggcttat cgttcatcta cgagaagcc	660
agcgcttacc atagtgttttt	gtgcactggg tcagcagcga gtttctggaa acgggatcac	720
aatgagagag ctggagttga	gcttagggct ggacttcact tcagaatgtt attgggttcaa	780
aacttggat gtaaaacaaga	attttgtttt ttttgcagaa aaagaaatttgc ttgtaaacat	840
ggaagtgtaa aaatttattt	gtaatgagaa ctaaagatgt ctttgcgttcc aaatttttaac	900
taatgacaat atatgaaata	tgcgtacat ggtgttgcgtt ataatttttaaaacgaaaag	960
gagaattttt actaaaataaa	aaaaaaaaata aaaaaaaaaaaa aaaagaaaaaa aaaaaaaaaaa	1020
aaaaaaaaagtc gacatcgata	cgcgtggtca	1050

Figure 6a: Predicted Amino Acid Sequence of unspliced (M1) product of ISA3mx

MSGFNLEVMVPEQGGKVVFSLTETGSCVSFYGDDEPGEGSCELASENMDFPSCPLGNGDD 60
FCLSLALSTMRWSGMTKRNNFMDRFIGSFVHCTPVMWISYGNLSKKSHHKMVCHTCPDEY 120
KFSDKDEMKGYYEGCLEASTDIFLDELATVVTGGFPVGLKGSGWGGWYLKYVRYAGLAG 180
SSGFIVNQRFYDRAQNKTGSRVSMVEMDGDGGLSFIYEKPSVYHSDGCTGSAARFWKRDH 240
NERAGVELRAGLHFRM 256

Molecular weight: 28,498

Theoretical pI: 5.38

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Figure 6b: Predicted Amino Acid Sequence of spliced (M2) product of ISA3mx

MSGFNLEVMVPEQGGKVVFSLTETGSCVSFYGDDEPGFFPVGLKGSGWGSYLYVRYAG 60
PLAGSSGFIVNQRFYDRAQNKTGSRVVSMVEMDGDGLSFIYEKPSVYHSDGCTGSAARFW 120
KRDHNERAGVELRAGLHFRM 140

Molecular weight: 15,357

Theoretical pI: 6.82

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Figure 6c: Predicted Amino Acid sequence of spliced (M3) product of ISA3mx

MNLLLLLQVASFLSDSKVPGEDGTSSTSGMLDLLRDQVDSL SINDSTTEPKTRLDPGLYP 60
WLKWTTETAYRSSTRSLASTIVMGALGQQRGSGNGITMRELELSGLDFTSECDWLKTCYV 120
NKNFVFLSEKEIAVNMEVEKFICNEN 147

Molecular weight: 14,888

Theoretical pI: 4.65

Figure 7: ISA4ha Nucleotide Sequence

cagtcgtcta	tgtcttagaa	accatcctga	caccacctgg	ataggtgact	cccgaaggcgaa	60
tcaatcaagg	gtgaaccaac	agtctcttgc	tctggttaca	aacttcaagg	gaattctaca	120
agccaagaac	gggaatggtc	tcatgaagca	gatgagcggg	aggttcccaa	gtgattggta	180
ccaacctact	acaaagtata	ggattctata	cattggtaca	aacgactgca	ctgagggccc	240
taacgacgtg	atcataccga	cgtcaatgac	actagacaat	gtggcaaggg	acctgtaccc	300
gggagcatgt	cgagggagatg	taagagtgac	accaacccctc	gtgggagcag	ctgagcttgg	360
actgattggg	agaacagatg	ccttaacagg	attttctgtt	aagggtctga	ctttcaacaa	420
ccctactatt	gttagtagttg	gactaaatgg	aatgtcagga	atctacaagg	tctgcattgc	480
tgcctcttct	ggaaacgtag	gcggagtc当地	cttggtaac	ggatgcggat	acttcagcgc	540
tcctctgaga	ttcgacaact	tcaaaggaca	gatctacgtg	ttagacaccc	ttgaagtccag	600
aggaacaaag	aacaaatgtg	tcatacttag	atcttcttagc	aatgctccctt	tgtgtacaca	660
tatcaaaaaga	aacattgagt	tggatgagta	cgttgacaca	ccaaacactg	ggggcgatata	720
tccttctgtat	gggtttgatt	ctcttcacgg	ctctgtttcg	attagaactt	ttttaacaga	780
ggcactgaca	tgtccaggtg	tagattggga	cagaattgtat	gcagcttcat	gcgagtatga	840
cagttgtcct	aaacttgtga	aagaatttga	ccaaacaggg	ctcggaaaca	cagataactca	900
aataatgaga	gagctagaag	cacaaaagga	gatgattggt	aaacttggca	gaaacattac	960
agacgttaaac	aacagagtag	atgctattcc	accacagctt	agcaacatct	tcatcttat	1020
gggagttggca	ggt					1033

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Figure 8: ISA4ha Amino Acid Sequence

1	11	21	31	41	51	
1 SRLCLRNHPD TTWIGDSRSD QSRVNQQSLD LVTNFKGILQ AKNGNGLMKQ MSGRFP PSDWY						60
61 QPTTKYRILY IGTNDCTEGP NDVI IPTSMT LDNVARDLYL GACRGDVR VT PTFVGA AEELG						120
121 LIGRTDALTG FSVKVLT FNN PTIVVVGLNG MSGIYKVCIA ASSGNVGGVN LVNGCGYFSA						180
181 PLRFDFNFKGQ IYVSDT FFEVR GTKNKCVILR SSSNAPLC TH IKRNIELDEY VDT PNTGGVY						240
241 PSDGFDSLHG SASIRTFLTE ALTCPGVWD RIDAASCEYD SCPKLVKEFD QTGLGNTDTQ						300
301 IMRELEAQKE MIGKLGRNIT DVNNRVDAIP PQLSNIFISM GVAG						

Molecular Weight: 37,437

Theoretical pI: 5.38